Iowa Data Warehouse

Sharing Meeting
AEA 267 • AEA 10 • AEA 11

HEART

Connor Hood

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Iowa Department of Education

Handout

HEART

Security management

We back up data using a tape backup system and a separate 4D transactional backup system. We also run servers with RAID hard drive systems to protect against drive failure. Access to the database itself is through client access or web access. Schools use only the web access. Client access to the database is limited to the AEA staff who administer the database and is password protected.

All web-based data transmissions occur using SSL technology to encrypt and protect data during transfer. Access to the database via the web has a three-part authentication (district ID, user ID and password). All web access is via html, generating unique, time-stamped pages that cannot be bookmarked or accessed through the browser history after they time out.

Each district using HEART was required to identify a security manager. This person or team has been given training and access to security management tools, and is then responsible for establishing and managing security for their own staff. Several levels of access are available, ranging from the ability to view graphs and no student identifiable data to open access to view all student data from the district at an individual level. Access can be limited by building, and there is capability to define/limit access to individual students' data at the classroom level (although very few districts choose to use this level of access). The ability to view IEP and SES status are locally controlled.

Access to district data is totally controlled by the district. Other than the three AEA staff who manage the databases, no AEA staff have access to district data (student identifiable individual data and/or summary data) unless the district specifically grants that access and sets the staff member up with login privileges. There are no cross-district analysis capabilities.

District choices for access vary from extremely restricted to very broad. In some districts a small number of administrators access the system. In others, all teaching staff have fairly broad access. Some districts opt to have AEA staff access their data. Others do not.

Data entry

Districts send us ITBS/ITED data files for import. We accept the ITP CDs directly, and also take the files as email attachments. We have experienced some problems with corruption during email, but the problems are rare and so catastrophic that it's immediately obvious that the data are garbled. When the file arrives we archive a copy of the file on a secure server. This helps us with debugging and other data coaching. We perform a few data integrity checks (check for JMC ID errors, watch for corrupted files, etc.) prior to import. In addition to ITBS/ITED data, we have standard imports for NWEA tests and ICAM tests. We also have a generic import template that allows districts to import any other district-wide assessments they'd like to have in the system. We use the ITP barcode file format to import student information. In addition, there are import formats to set up user accounts in bulk. Importing is logged and includes features to "back out" imports.

Data cleaning

Imports match on state ID, first and last name and birth date (MM/YY only for ITBS/ITED). Non-matches create new student records. We have observed that ID numbers and names sometimes get swapped around, although the errors seem to be decreasing. There is a cleanup system that allows a trained district staff member to merge student records, linking data across years. This allows the school to fix the non-matches and clean up old data errors. In this interface they can fix most student information (name, gender, ID, birth date). Errors in volatile codes (IEP, SES, ELL, FAY, etc.) can only be changed centrally. We can use a modified bar code file to change disaggregation variables in the system. In addition, we provide coaching and consultation to districts as needed about how to resolve data errors at the source.

Data storage and display

The data structure in HEART allows us to store essentially any kind of assessment results. There are fields for multiple score types, allowing us to control the type of analyses that can be done on any score type. Whenever appropriate, displays are constructed to adapt to different tests and score types. The following displays are currently available in HEART. All displays can be copied and pasted into other applications.

- Proficiency level graphs
  - Three proficiency levels (user set, except ITP, which is 40-90)
  - Up to XX years of data
  - Single test
  - District or building level (or class if set up)
  - Cross-section
  - Cross-section, biennium average
  - Simple cohort or grade cohort (all students, across years selected)
  - Matched cohort (only students present across selected years)
  - Disaggregations: IEP, SES, Gender, Ethnicity, Migrant, ELL
  - Filter for FAY or all
  - Suppress cells less than 10
- Single-level proficiency graphs
  - Same as above, except only displays the percent proficient or higher
  - Adds state/nation comparisons when appropriate
- Proficiency distribution graph
  - Displays sorted bar chart for all scores in selected group, high to low
  - Single year
  - Single test
  - Disaggregations: IEP, SES, Gender, Ethnicity, Migrant, ELL
  - District or building level (or class if set up)
  - Filter for FAY or all
- Frequency distribution graph
  - Displays frequency distributions with user-specified number of bins\
  - Single year of data
  - Filter by disaggregations: IEP, SES, Gender, Ethnicity, Migrant, ELL and FAY

- Score-level reports
  - Tabular display of individual student scores
  - Single test
  - Filter by disaggregations: IEP, SES, Gender, Ethnicity, Migrant, ELL and FAY
  - Click on column headers to sort
  - Click on student ID to access individual student cumulative report of test data
  - Download link to save Excel file of data display
- Multi-test display
  - Select a content area (reading, math, etc.)
  - Select up to four tests, up to four administrations each
  - Displays scores, color coded by district-specified 4 proficiency levels
  - Click on column headers to sort
  - Click on student ID to access individual student report
  - Download link to save Excel file of data display
  - Interface for district to set their own proficiency level cut points (used only in the multi-test display)
- Growth chart display
  - Shows individual student (or group average/median) standard scores across years plotted against normative "growth chart"
  - ITBS/ITED only
  - "Growth chart" lines with defaults at 25 – 50 – 75 percentile, 10 – 50 – 90 percentile, 33 – 66 percentile, or user-specified
- Individual student comprehensive report
  - Text-based report of all scores connected to an individual student
- Behavior Module
  - We are working on a federal/state grant to develop a module in HEART for tracking and analyzing office referrals. Currently in a pilot, we have ten schools using this system.
  - We track specific data on individual student behavior referrals, including referrer, problem behavior, consequence, location, time, and other variables.
  - Data analysis tools allow users to examine periodicity, location, referrer, behavior type, and other similar variables.
  - Behavior data analysis includes capability to view student achievement data for individual students from within the behavior analysis section.

Other features

We have fake data for a district set up for demonstration. The names are replaced and other district data is modified. This allows us to train and demonstrate using a live server with "real" data without violating confidentiality.

NefertitiSort
- Key
- SortDate
- Time
- UserID
- aSrchTestID
- aSrchTestYear
- aSrchTestSeason
- aSrchTestGrade
- aTestMaster
- aTestMasterType
- StudentDemographics
- aCutScores
- StudentScores

Student
- InternalStudentID
- FirstName
- LastName
- DateofBirth
- DistrictStudentID
- Gender
- Ethnicity
- InternalDistrictID
- DOBMMYY
- ImportDate
- ImportTime
- MiddleName
- ImportKey
- FYInDist
- FYInBldg
- SafeLname
- StateStudentID
- CurrentBldg1
- CurrentBldg2
- CurrentGrade
- DateModified
- Inactive

Building
- BuildingID
- Name
- InternalBuildingID
- InternalDistrictID
- LowGrade
- HighGrade
- NonPublic
- ShortName

District
- DistrictID
- Name
- Nonpublic
- InternalDistrictID
- Password
- PermitCleanup
- UseStateStudentID
- TrainedonBehavior
- TrainedonNefertiti

ImportLog
- Date
- StartTime
- InternalDistrictID
- TestYear
- TestMonth
- Tests
- RecordsRead
- StudentsAdded
- ScoresAdded
- EndTime
- Operator
- BuildingGrades
- Comments
- ImportKey
- DocumentName
- FileName
- ImportDeleted

Class
- ClassID
- InternalDistrictID
- InternalBuildingID
- DistrictClassID
- ClassTitle
- SchoolYear
- Grade
- ImportKey

GrowthValue
- TestID
- PercentileRank
- ScoreValueK
- ScoreValue1
- ScoreValue2
- ScoreValue3
- ScoreValue4
- ScoreValue5
- ScoreValue6
- ScoreValue7
- ScoreValue8

Score
- InternalStudentID
- TestID
- InternalDistrictID
- InternalBuildingID
- Year
- Month
- Grade
- NumericGrade
- ProficiencyRating
- PercentileRankScore
- RawScoreOrdinal
- GradeEquivalentOrdinal
- RITScore
- NCEScore
- StanineScore
- StandardScore
- GradeEquivalentInterval
- RawScoreInterval
- PercentCorrectScore
- FreeReducedLunch
- IEP
- Migrant
- ELL
- ImportDate
- ImportTime
- TestYear
- NotinAverage
- Ethnicity
- Gender
- ImportKey
- FullAcademicYear
- ModifiedDate
- TestForm
- Season

ScoreSummary
- InternalDistrictID
- TestYear
- InternalBuildingID
- TestID
- Month
- Grade
- Key
- ImportKey
- Season
- Form

ProficSummary
- InternalDistrictID
- TestYear
- InternalBuildingID
- TestID
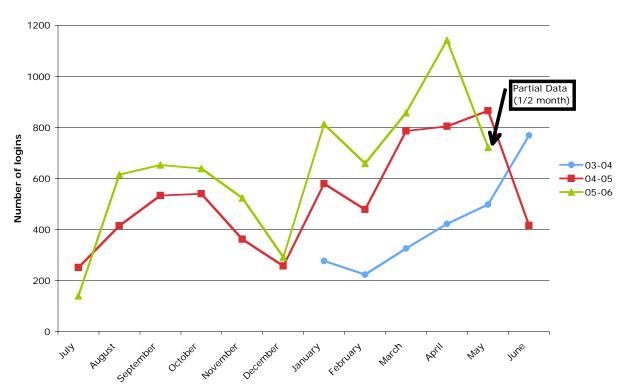- Grade
- StateBuildingNumber
- Key
- DisagType
- DisagValue
- Proficiency1
- Proficiency2
- Proficiency3
- TotalCount
- ValueTotalCount

ClassStudent
- ClassID
- InternalStudentID
- ImportKey

ClassStaff
- ClassID
- UserID

User
- UserCode
- InternalDistrictID
- Password
- UserID
- AllowCleanup
- Administrator
- AccessLevel
- Teacher
- ViewIEP
- ViewSES
- ImportKey
- BehaviorEntry
- BehaviorAnalysis
- LastName
- FirstName
- FullName

LoginStats
- Date
- UpdateTime
- UserID
- IP
- Key

Referral
- ReferralID
- InternalStudentID
- Date
- Time
- Location
- Grade
- NumericGrade
- HomeroomTeacher
- ReferringPerson
- ReferringPosition
- PrimaryBehavior
- SecondaryBehavior
- PrimaryConsequence
- SecondaryConsequence
- Comments
- InternalBuildingID
- InternalDistrictID
- ReferralType
- PotentialFunction

UserBuilding
- UserID
- InternalBuildingID
- ImportKey

PlannedAssessment
- PlannedAssessmentID
- InternalDistrictID
- TestID
- CutScoreType
- LowerCutScoreK
- UpperCutScoreK
- LowerCutScore1
- UpperCutScore1
- LowerCutScore2
- UpperCutScore2
- LowerCutScore3
- UpperCutScore3
- LowerCutScore4
- UpperCutScore4
- LowerCutScore5
- UpperCutScore5
- LowerCutScore6
- UpperCutScore6
- LowerCutScore7
- UpperCutScore7
- LowerCutScore8
- UpperCutScore8

HTML
- Title
- HTMLCode
- CalledBy
- PostsTo

Test
- TestID
- CombinedTestName
- SubtestContentArea
- AlphaCode
- ShortTestName
- FromGrade
- ToGrade

zDialog
- ServerIP
- DataFile
- AEALogo

IowaComparisons
- Grade
- Subject
- ProfLevel
- GradeSubject
- PercentProficient
- TestingYear

CleanupLog
- OldStuDistrictID
- OldFname
- OldLname
- OldDOB
- OldGender
- OldEthnic
- NewDistrictStuID
- NewInternalStuID
- NewFname
- NewLname
- NewDOB
- EntryDate
- EntryTime
- UserID
- UserIP

Counters
- CounterType
- NextNum

HEART Statistics as of 5/15/06

Server	Student Records[1]	Score Records	Users	Logins in 05-06	Districts in AEA	Active Districts
AEA 11 A-H	54,372	2,077,610	943	2,521	30	27
AEA 11 I-P	64,417	2,420,804	626	2,124	26	23
AEA 11 Q-Z	74,378	2,087,081	705	1,358	28	25
AEA 1	44,286	1,525,548	207	840	28	27
AEA 15	49,453	1,314,886	89	51	28	Na[2]
AEA 16	24,584	660,899	55	136	20	12
Total	311,490	10,086,828	2,625	7,030	160	114

[1] Student records include duplicates due to unsuccessful matches – numbers reduce as districts clean up duplicate students.
[2] Districts in AEA 15 are not yet using HEART.
Note: beginning this school year Northwest AEA and Prairie Lakes AEA intend to begin using HEART.

Monthly login stats for HEART